The Weaponizing Of Biology: Biological Warfare

Weapons, a thing designed or used to inflict bodily harm or to cause physical damage. Today when the word weapon is used, it is natural for one to assume a firearm of some sort or an assault rifle. In medieval times this could've been your common sword, perhaps a mace or a spear, but what about taking the living organisms that make up the world and using them as weapons? By briefly explaining biology we can see how certain acts of aggression could affect a large population on a molecular level.

Biology is the study of life and living organisms, from one-celled creatures to the most complex living organism of all — the human being. Biology includes the study of genes and cells that give living things their special characteristics. Despite the brilliance and beauty of such a topic, many times has it been used by malevolent actors committed to bring agony and death, and in a most insidious manner: through the spread of disease. Unfortunately, the knowledge of doing so has been around for many years and used across the world. Biological aggression in its many forms has been a bane to humanity for centuries, a practice adopted from various cultures around the world which has been denounced as one of the most despicable and intolerable forms of violence. Biological aggression can be classified into three subgroups known as: biowarfare, bioterrorism, and biohacking. Whereas the first two, by definition, peak in acts of violence, and the third refers to a newer movement that promotes "do it yourself biology" (DIYbio).

Beginning with biological warfare, also known as "germ warfare", individuals have long taken part in such notorious practices. Not only has this taken place in foreign lands, but our very own United States. One of the very first to date was the, quite unknown, assassination attempt of U.S president Abraham Lincoln. In 1864 amid the Civil War were harrowing times for the American people, including the commander-in-chief. Not only was Lincoln possessed with many political burdens, Lincoln also suffered from depression, and a genetic condition known today as spinocerebellar ataxia. On top of that, Lincoln had contracted smallpox, complaining of headaches and dizziness as he readied to deliver the Gettysburg address. Shortly after, skin lesions and muscles cramps were eminent and added to his misery. Yet the stalwart leader remained firmly at the steering wheel, choosing to care for the crippling nation instead of his own personal health. A decision that would leave Abraham physically vulnerable, a state that would not go unnoticed by his adversaries. On the opposite end of the spectrum, the antagonist was a Kentucky physician who went by the name of Luke Pryor Blackburn. Blackburn had long despised the Lincoln administration and after three years of the president showing no signs of leaving, Blackburn decided to take matters into his own hands. Blackburn had launched a plot that he believed would remove Lincoln from the political stage once and for all; a plot that would involve the first attempt to transmit a grave illness to a sitting president. Blackburn had known of another major illness, yellow fever, that could bring the end he was looking for.

To begin such a plot, Blackburn set sail to the island of Bermuda, where an epidemic of yellow fever was occurring. The welcoming Bermudians looked to Blackburn as godsend due to his expertise in the containment of the disease, but little did they know of his true intentions. While Blackburn did aid in the controlling of the epidemic, he also collected items such as bedding and clothing from those who had fallen from the disease. Acquiring eight trunks of contaminated material, the physician sent the items to Godfrey Hyams, a dodgy shoemaker, in Nova Scotia

where the shoemaker was to deliver the trunks to the District of Columbia. The trunks would then make its way to an auction house in the capital city where it would supposedly inflict hemorrhagic fever to Washington's residents and most of its politicians. The final set of trunks were strategically sent to New Bern, North Carolina, and Norfolk Virginia, which were captured and occupied by Union troops at the time. Lastly, Hyams was given a valise with more contaminated items. Hyams was instructed to take the valise and an anonymous letter directly to the president. The thought was that even if the president did not encounter the contaminated clothing, its mere presence would be enough to complete the task. Blackburn then sailed back to the island of Bermuda and began collected more contaminated material, this included poultices, clothing, and bedding covered with black vomit. Reaching his final phase, Blackburn had set out on dispersing the items in one of the most populated metropolises of them all, New York City. Blackburn was hoping that the outbreak would dishearten and dispirit the citizens in anti-slavery states, sapping their resources and taking away their ability to continue waging war against the confederacy.

As time passed, Blackburn's plan had not taken the desired course. Hyams would not deliver the valise to Lincoln due to panic, the shoemaker realized the potential consequences of his actions and decided not to go through with the plan. It was also eventually found out that the items Blackburn had sought out to possess from the Bermudian deceased would not present danger to the public. A Cuban physician and researcher known as Carlos Finlay later discovered that yellow fever was, in fact, a mosquito-borne illness. This fact was unknown during the time of Blackburn's plot and would be figured out a year later. Although in the Autumn of that year Blackburn had thought his secret attack had played out when the yellow fever had reached the town of New Bern, North Carolina. It was noted as one of the worst outbreaks in the country, although rather than the large quantity of Union troops it was instead the towns people that fell in large numbers to this disease. Nearly over two thousand people perished from this disease.

Nearly seven months after the fact, Lincoln had joined the dead, but due to an assassin's bullet rather than the disease set out for him. This does not take away from the fact that the attempt from Blackburn and Hyams was highly unethical and done with an immense amount of ignorance for the infectious disease. Although authorities soon uncovered the pairs attempt to unleash the biological plot, both were allowed to walk free owing to a legal technicality. Blackburn continued his practice in medicine and was later elected governor of Kentucky. The attempt by American citizens to commit mass murder on American soil for political purpose was both unprecedented and unforgivable.

Moving on to bioterrorism, which can be classified as the intentional release of viruses, bacteria, or other germs that can sicken or kill people, livestock, or crops. Providing another sample that relates to home would be the al Qaeda-anthrax project. Al-Qaeda, a group established in 1988, was created to repel, in their eyes, uninvited foreign influences in Islamic territories, most notably the invasive United States. This group sought out to destroy any sort of Islamic regimes it deemed as corrupt.

In 1988 after the relocation of the Islamic headquarters to Afghanistan, the group's leader famously known as Osama bin Laden, had set out on plans of acquiring weapons of mass destruction (WMD). Also, in the headquarters were the blueprints of the diligently choreographed attacks on the World Trade Center. Osama believed that by carrying out the operations being held in the headquarters; he was fulfilling his religious duty. Osama ordered on

of his deputies Ayman al-Zawahiri to oversee a WMD program with chemical, biological, and nuclear capabilities. Zawahiri involved his microbiologist colleague Rauf Ahmed in the launch of a project code-named “al Zabadi” which was an Arabic term for spoiled milk. In one of its early efforts, researchers created what was to be an insecticide-based “home brew nerve gas”, as well as napalm mixtures. Zawahiri later attended a biological seminar in England where he then decided that al-Qaeda’s WMD program required more brains, which was a task that was met. Along with more scientists, al-Qaeda’s acquired a new inventory of harmful bacteria such as Clostridium botulinum and Salmonella as well as chemical compounds of cyanide.

After the carrying out of the September 11th attacks, members of a U.S-led coalition raided a home in Kabul, the capital city, and found an abundance of bioterrorism materials. The home, which was owned by nuclear engineer Sultan Bashiruddin Mahmood, and top al-Qaeda figures such as Zawahiri himself, was found as a meeting place to brainstorm WMD scenarios. Throughout the lab were multiple gas masks, laboratory equipment, training manuals, and booklets proposing that there was an anthrax seminar recently. Horrifically, the team also had found blueprints for helium balloons designed to carry anthrax. The goal was that our U.S. fighter jets would see these balloons and shoot them down, causing the release of anthrax over the area of its demise.

Almost a year later, coalition forces came across a partially complete laboratory that was abandoned my al-Qaeda members in the wake of catastrophic air raids. After military technicians had analyzed the laboratory, they had found tell traces of anthrax, which was quite the disturbing finding. In 2003 the U.S. had captured al-Qaeda’s mastermind scientist Khalid Sheik Mohammed, the architect for the September 11th attacks. Along with the capture of Khalid was all of his personal belongings, what was found to be most useful was his computer hard drive which store incriminating evidence of pathogen inventories, timelines for constructed biological and chemical weapons, as well as existing documents that confirmed that al-Qaeda was still considering the use of Biochemical agents against the United States.

It was the same year, 2003, that an al-Qaeda cell from Bahrain had formulated a cyanide-based gas dubbed as “the Mob taker” had been prepared to be released on the New York City subway. The attack, however, would not be carried out. Ayman al-Zawahiri who had learned of the plot only a few hours before, intervened commanding the cells to abort the mission. “Zawahiri canceled the planned attack on the New York City subway for ‘something better,’” says Rolf Mowatt-Larssen of the Harvard Kennedy School of Government, as sentence that was all too chilling. Zawahiri felt that the attacks would not achieve the goals of al-Qaeda, in other words Zawahiri is exclaiming that the attack would not have been sensational enough for al-Qaeda’s global reputation, and that it called for something more ‘spectacular’.

Finally, the last topic of the three is biohacking, which can be further explained by delving into the definition of hacking and the differentiations of the words meaning over time. Although hacking is commonly thought of as the shadowy figures that infect our computers or maneuver past our firewalls to access our personal information, the expression held a very different meaning when it introduced nearly 60 years ago. In the 1950’s it was the time of research and development, technology and innovation, a very invigorating period. Hackers back then stood on the same pedestal as artisans and craftsman, idolized for the intimate understanding of the machines they worked with. Originating at Massachusetts Institute of Technology (MIT) a group of close knitted students adopted the term “hacking” to describe their activities. Amongst the hackers’ early endeavors were programs that would instruct computers to translate text to

various language, play sounds/music, or games. One of the students in the group, Steve Russel, created one of the first digital computer video games the world had seen. The game was free to access, meaning no payment was required, because of what was known as the hacker ethic. Hacker ethic consists of the following beliefs: information is inherently free, knowledge should be shared not copyrighted, patented, licensed, or otherwise “owned” or controlled, and hacking should strive to improve the world. Keeping that in mind we can now combine biology and hacking and get the term biohacking, which many fears may culminate in biological violence as well, consisting of “citizen scientists”. Ranging from amateurs to professionals, these are people who tackle biological projects beyond the walls of a traditional institutional setting. Thus, allowing for less regulation and little to zero oversight. Common experiments, which are characteristically warm-hearted, involve the manipulation of DNA, which are becoming much more frequent and sophisticated due to technological affordability. These experiments are often for the scientists own curiosity, or perhaps for their findings to make a market value. “These hobbyists represent a growing strain of geekdom know as biohacking, in which do-it-yourselfers tinker with the building blocks of life in the comfort of their own homes,” write Jeanne Whalen in the Wall Street Journal. Given the nature of the topic it should come at no surprise that there are edgy tales exclaiming the inevitability that a cracked or devious hobbyist is going to create a dangerous artificial life form in a suburban laboratory. Although it may seem like click-bait at first, this is a common fear of many in the world, with un-imagined possibilities. The fact is, those conducting the experiments with DNA, whether hobbyists with minimal education to professional engineers, often lacking training in biosafety measures. Which in some cases could also indicate the lack of biology education itself, most importantly genetics, and thus may not be fully aware of the hazards that are to come with the work. “This ultimate domestication of biology could easily lead to unprecedented safety challenges that need to be addressed: more and more people outside the traditional biotechnology community will create self-replicating machines [life] for civil and defense applications; “biohackers” will engineer new life forms at their kitchen table; and illicit substances will be produced synthetically and much cheaper,” says Markus Schmidt of the Biosafety Working Group. The major concern of biohacking is the “garage biologist” who harbors the darker motives, the person who sets out to deliberately inflict harm on society. Certainly, the likelihood of such a person is cause for concern, particularly given the history of the common computer hacker. With such availability and free will within such a topic, explains why biohacking is seen as a threat.

Upon the arrival to the end of the book, I had felt like I was awakened to the world. My perspective on what was scary, and not scary, had changed after the 211 pages. Diving right into it, I can admit that this is a very alarming topic. On todays news we often her about the tragedies that occur with the use of a different assortment of weapons, but after this reading it is very clear to me that biology is the biggest threat to life. Quite ironic if you think about it, I had mentioned in the introduction that biology is what makes up life, and the biggest threat to what makes up life is itself. What drives most of the fear is the ability for damage to be done at a molecular level, without notice. As well as the ability to be struck at any time due to the ease of distribution. Thinking back to the example given about the New York City subway station cyanide-gas attempt sets a traumatizing fear in my head. Imaging going about my day doing my daily business, like riding a train, and instantly becoming a victim to a possible terrorist attack in a matter of seconds. People cope with the thought of an attack by learning defenses, but no amount of punches, kicks, bullets, or explosions can defeat biology. Tagging back along to the ease of distribution, today one isn’t required to be remotely close whatsoever to end a life. The innovations of technology are without a doubt a great thing, but the ability to take these great things and use them for evil is also a major possibility.

For a plan of action in case an event of some sort was to happen, I would hope that government officials have a major plan set aside. Personally, just like the multiple films we had seen relating to the topic, I would have my own set of essentials at a low point underground, ensuring survival for at least six weeks. Given the severity of the nature, it is almost unlawful to expect first responders to be much assistance considering they are the same species. Either way if a biological attack does occur, casualties will almost be guaranteed due the fact that it takes time for certain tasks to be put into order, and because of the molecular secrecy. Relating back to the films Threads and Command and Control we can get a glimpse of what life looks like during and after the atom bomb, both looking highly dissatisfying. I believe if a nuclear attack were eminent, I would simply accept my fate. It is my greatest hope that there is no evil in the world that would trigger such events.

Work Cited

1. Vargo, Marc E. The Weaponizing of Biology: Bioterrorism, Biocrime and Biohacking. McFarland & Company, Inc., Publishers, 2017.